Solid Oxide Fuel Cell Ceramic Paste technology available for licensing

Lawrence Berkeley National Laboratory

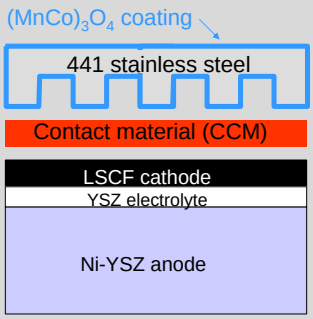
Improved bonding between fuel cell and interconnect, without sacrificing electrochemical performance

Invention #WIB-2933:Improved Cathode Contact Materials for Solid Oxide Fuel Cells

Problem overcome:

Cathode contact material (CCM) is used to bond cell to steel interconnect
- Bonding occurs at 1000°C or less to avoid oxidation of the steel

This is a low sintering temperature for conventional SOFC ceramics; incomplete sintering leads to:
- poor bonding
- reduced conductivity

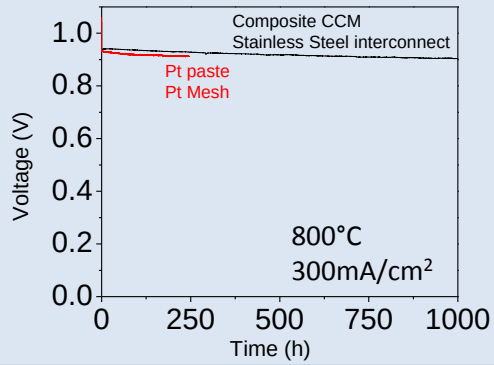


Technical solution:

Addition of inorganic binder or glass yields composite with improved bonding

Selection of optimum glass and inorganic binder composition yields:
- Improved bonding at high temperature and room temperature
- Excellent conductivity of composite matrix
- No degradation of electrochemical performance due to addition of composite material
- No change in paste application or firing procedure necessary

Excellent performance and stability maintained with addition of composite material



Composite CCM displays dramatically improved high-temperature mechanical properties

Interfacial fracture toughness at 800°C

Composition	Average (N/mm)	Minimum (N/mm)
LSM	1.7	1.6
LSM+Glass A	6.8	2.5
LSM+Glass B	12.3	4.9
LSM+Binder C	5.4	3.9

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Information on licensing technology from LBNL is available at:
http://www.lbl.gov/Tech-Transfer/industry/index.html